



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,473	03/28/2005	Jarmo Ruohonen	0365-0625PUS1	8171

2292 7590 05/13/2009
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

CWERN, JONATHAN

ART UNIT	PAPER NUMBER
----------	--------------

3737

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

05/13/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No. 10/529,473	Applicant(s) RUOHONEN, JARMO	
	Examiner Jonathan G. Cwern	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/2/08 has been entered.

Claim Objections

Claims 1-17 are objected to because of the following informalities:

In claim 1, remove the period after EEG. In addition, there appears to be unusual spacing between several words in claim 1.

In claim 4, in the phrase "the head surface" it is unclear which head is being referred to (first or second).

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al. (US 2003/0050527) in view of Vilsmeier (US 7194295).

Fox et al. show, a method for modeling different internal structures of a head, such as different parts of the brain, in order to focus magnetic stimulation and/or visualize the results of magnetic stimulation, MEG or EEG ([0025]-[0028]), the method comprising the step of determining the location of the internal structures, such as the different cerebral parts, of at least one first head (B) in a three-dimensional space by technical means, such as magnetic resonance imaging or computer-aided tomography ([0025]-[0028]), and determining the external structure (dimensions of the scalp surface are determined by the 3-D digitizer, [0025]-[0028]). The internal structures are further co-registered to functional areas of the brain determined by PET or fMRI, making a conjoined functional/anatomical model. It should be noted that while using the 3-D digitizer, only the external dimensions of a head are determined, and not the internal dimensions, and this does not require the use of MRI. Fox et al. also show, TMS localized in relation to anatomical marker points on the head surface ([0028]); measuring external head dimensions with a pointer with electrical position sensor means ([0028]); locating functional areas of the brain with the help of magnetic stimulation ([0087]).

Fox et al. fail to show, using a model of a second head for the external dimensions, and scaling the internal structure for the present patient (A) to fit to the model of previously imaged external structure (B), so that anatomical images do not

Art Unit: 3737

need to be acquired for the present patient (A); image data is scaled by moving pixels; deforming the image by minimizing distance between points, and accepting the minimization even when the distance between the points is not zero; performing measurements on a plurality of test persons; selecting the standard model from a library of images from a plurality of different people; and the scaling is linear or nonlinear.

Vilsmeier discloses a method for computer assisted medical navigation or treatment planning. Vilsmeier teaches, using a model of a second head for the external dimensions, and scaling the internal structure for the present patient (A) to fit to the model of previously imaged external structure (B), so that anatomical images do not need to be acquired for the present patient (A) (column 2, line 1- column 4, line 55); image data is scaled by moving pixels (shifting, rotating, stretching, or compressing the model on a screen output, column 3, lines 40-45), these scaling techniques include both linear and nonlinear techniques; deforming the image by minimizing distance between points, and accepting the minimization even when the distance between the points is not zero (it is well known to accept computations with a small amount of error, i.e. not zero, for example as illustrated by Fox et al., [0108]); measurements performed on a plurality of test persons and selecting the standard model from a library of images from a plurality of different people (actual vertebra image data sets, column 2, lines 35-50).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have combined previous image data with the present patient's data as taught by Vilsmeier, in the system of Fox et al., with the motivation that this will spare the patient the radiation load, and the costs of producing the data set can be

Art Unit: 3737

saved (Vilsmeier, column 2, lines 1-20). Although Vilsmeier does not specifically mention transcranial magnetic stimulation, there is a reasonable expectation of success to combine these references, because both are related to three-dimensional modeling of the human body for medical techniques.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fox et al. (US 2003/0050527) in view of Vilsmeier (US 7194295) as applied to claim 1 above, and further in view of Krause et al. (US 6711432).

Krause et al. disclose a computer-aided orthopedic surgery system. Krause et al. teach that a database of models can store different templates based on a person's age (column 5, line 55-column 6, line 10).

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to have stored different templates based on a person's age as taught by Krause et al. in the combined system of Fox et al. and Vilsmeier. Vilsmeier teaches that there will be a plurality of different models, and that a model is chosen which best fits the patient-characteristic data (column 2, lines 40-50). Age is a common patient-characteristic data which can be stored for a model database as taught by Krause et al., because people of the same/similar age will have more similar data. For example, if the patient were a young child, the model of a similarly aged young child would typically fit better than the model of an adult.

Response to Arguments

Applicant's arguments filed 12/2/08 have been fully considered but they are not persuasive.

In regards to applicant's arguments regarding correlating brain function, examiner respectfully disagrees. Fox determines a conjoined functional/anatomical model, from co-registered functional and anatomical images. This registers the functional data to structural data, and therefore the locations of functional areas in the brain are associated with structural data. Applicant states, "although it may be possible to correlate the structural aspects of one brain from a first head to a second head, thereby getting an estimate of where in the second head those structures are, such correlation does not translate directly into an ability to correlate brain functional areas." The examiner submits that the step of determining a conjoined functional/anatomical model does in fact allow for the structural location data to directly translate to brain functional areas. In addition, applicant admits in the next paragraph on page 8, that there are in fact structural areas of the brain which correspond to areas of brain function, such as the hippocampus or the corpus callosum. Therefore, locating those structural areas would identify locations of a functional area of the brain, and scaling those structural areas would meet the limitation of "scaling location data of said at least one functional area".

In regards to applicant's arguments that it is not obvious to combine the references, examiner respectfully disagrees, for the same reasons as outlined above.

Art Unit: 3737

The structural data of the brain will correlate with functional data in the combined invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan G. Cwern whose telephone number is (571)270-1560. The examiner can normally be reached on Monday through Friday 9:30AM - 6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jonathan G Cwern/
Examiner, Art Unit 3737

/BRIAN CASLER/
Supervisory Patent Examiner, Art
Unit 3737

Application/Control Number: 10/529,473
Art Unit: 3737

Page 8